

O P S

3 Axis position recording & synchronization with Optimet 3-D sensors

Jerusalem, January 2009....Optimet introduces the **OPS**, Optimet **P**osition **S**ynchronizer, a special firmware module embedded in Optimet sensor's electronics which records encoders output and synchronizes the accurate position up to 3 system axis together with the sensor measurements.

The OPS module method of operation:

1. System encoders signal counts or motion commands (from up to 3 axis), including direction, are received and recorded by the sensor in real time up to 25MHz (for each signal channel).
2. The position readings are synchronized with the sensor Z (distance) measurements.
3. The measurement data stream (from the sensor to the PC) includes the 3 encoders' recorded positions with the synchronized sensor distance measurements.

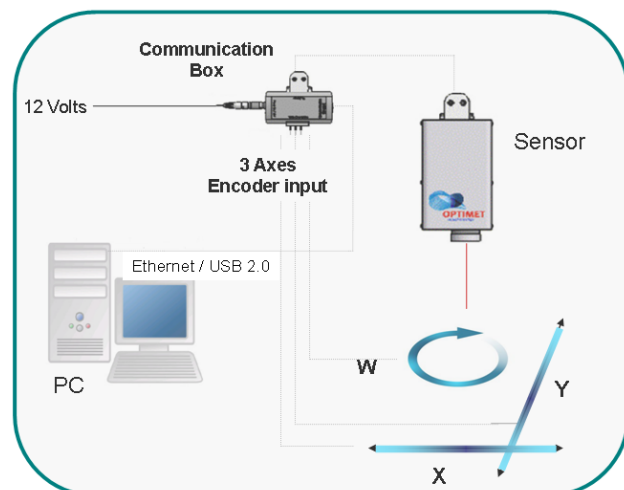
The **OPS** mode is available with Optimet [ConoProbe Mark 3.0](#) and [NanoConoprobe](#) sensors and is provided in addition to pulse operation modes.

The **OPS** increases the effective encoder position resolution by a factor of 4 by recording both A&B encoder signals with a high level of synchronization with the sensor measurement. The encoders' signals are received in a dedicated port of the sensor communication box.

The **OPS** module is used for integration of Optimet 3-D sensors in any 3-5 axis CNC machines or other systems, including manual systems. No special PC cards, special hardware or software is required for the integration.

The position recording, encoder resolution enhancement and synchronization capabilities provided by the **OPS** allow accurate and high speed scanning in 3 axis simultaneously. This includes rotary axis for cylindrical scans (in which angular positioning accuracy is increased) and spline movement.

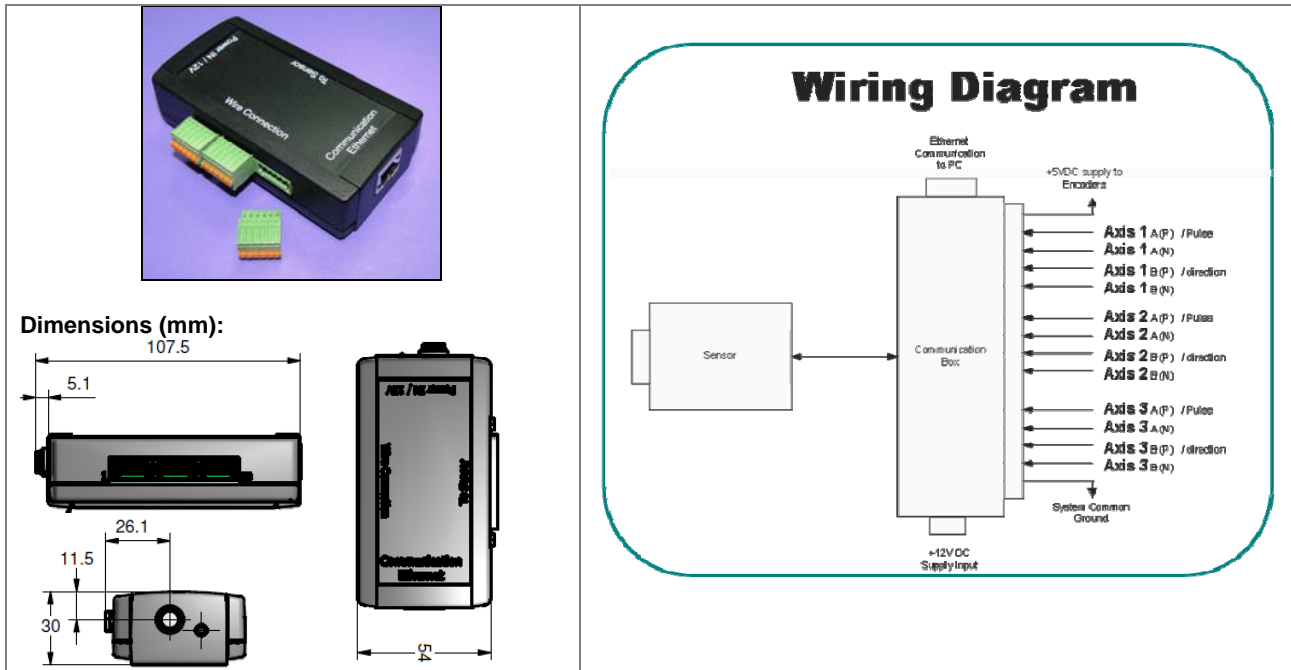
Therefore, the OPS module enables simple and cost effective integration of Optimet 3-D sensor in CNC and other machines with a high level of system synchronization and high speed accurate measurements.



OPS communication box

The communication box supports signals input from an incremental optical encoder or magnetic encoders, differential or single ended and provides +5V supply for the encoders. There is no change in the sensor software libraries.

Communication box & Wiring diagram:



Additional information:

- **Rotational and linear optical or magnetic Encoder inputs are supported.**
 - A&B in phase quadrature differential signals
 - Encoder Line Count multiplied by 4 (A&B signals X rise / fall edges for each signal).
 - Step and Direction differential signals.
 - Sensors counter for encoder readings / commands in 32 bit (for each axis).
- **Communication to the PC:** Ethernet or USB 2.0.
- **Operation modes:**
 - The sensor operates at frequencies up to 3Khz in standard "Time" mode.
 - Upon each "Start of measurement" all 3 counters (for 3 axis) are zeroed in the sensor firmware, and a new counter starts based on each encoder input.
 - Encoders are latched at mid time of the sensor measurement.
 - Measurement data stream: each measurement is provided with the 3 axis encoders count readings (positive or negative according to direction).
- **Electrical interface:** +5V (supply for encoders), CMOS Levels.
- **Optimet products are ROHS compliant.**

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About Optimet: [Optimet](#) (Optical Metrology Ltd.) - a member of [Ophir Optronics](#) group - is a developer and provider of sophisticated Non-Contact measurement sensors and solutions, with up to sub-micron precision, for distance, 2-D & 3-D measurements. Optimet implements practical application of its unique and patented conoscopic holography technology. Established in 1995, Optimet is a member of the [Ophir Optronics](#) group, a world leader in Laser Measurement Instruments, Optical Infra-Red components and lens-assemblies. Sold worldwide, with several thousand installations, Optimet products offer measurement solutions for a wide range of markets and applications, among which are the Automotive, Aerospace, Dental CAD/CAM, Steel and LCD / PDP. Optimet solutions and sensors are used for in-process inspection, quality control and reverse engineering applications. **Optimet** is ISO9001-2000 certified.